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November 5, 2004

Ms. Marlene H. Dortch, Secretary
Federal Communications Commission
445 12th Street SW
Washington DC 20554

Re: ET Docket No. 04-352, *Petition for Waiver of MBOA-SIG*
Ex Parte Communication

Dear Ms. Dortch:

On behalf of Freescale Semiconductor, Inc., pursuant to Section 1.1206(b)(2) of the Commission's Rules, I am electronically filing this letter to report an oral *ex parte* communication in the above-referenced docket.

Martin Rofheart, John McCorkle, Roni Haggart, and Mike Scullin, and I, on behalf of Freescale, met with Ed Thomas, Julius Knapp, Alan Scrime, John Reed, and Steve Jones (by videoconference) of the Commission staff.

A copy of our presentation outline is attached.

Please do not hesitate to call with any questions.

Respectfully submitted,

Mitchell Lazarus
Counsel for Freescale Semiconductor, Inc.

cc: Meeting participants

Opposition to MBOA Waiver Request

November 3-4, 2004

Launched by Motorola
freescale semiconductor

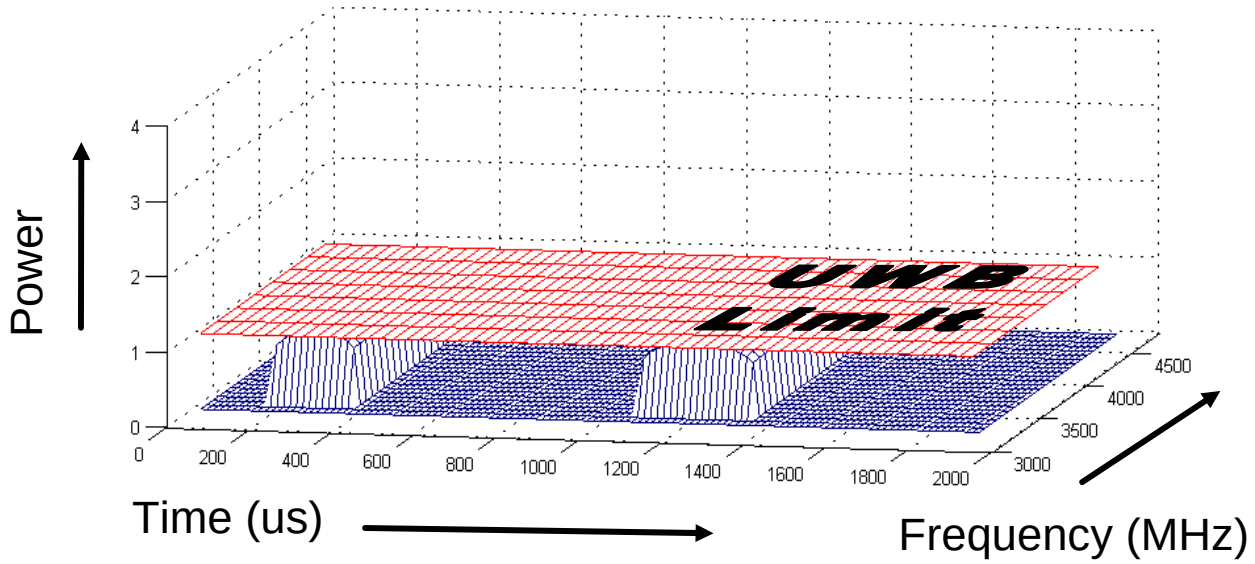
Freescale's History

- 70+ years in wireless from our Motorola past
- 50+ years in telecom semiconductors
- Major supplier of C-band systems
- Strong heritage in wireless communications
- UWB successor to XtremeSpectrum, Inc.

Launched by Motorola
freescale semiconductor

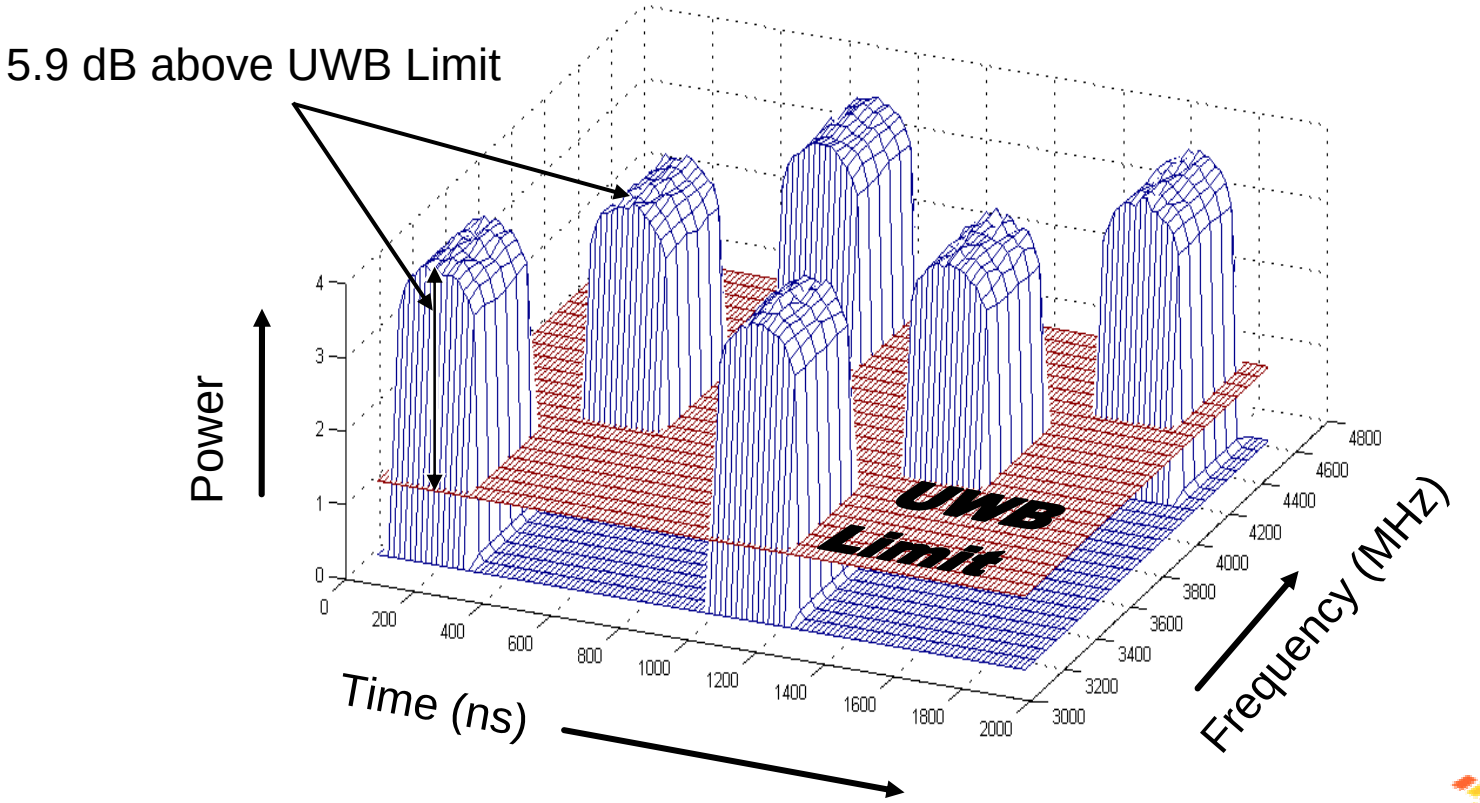
DS-UWB -- 1 Unit

- DS-UWB transmits intermittently because units must take turns
- Compliance test is made using continuous transmissions
  - Rules do not allow averaging across burst emissions
- Result is to limit emissions as illustrated below.



MBOA Waiver -- 1 Unit

- MB-OFDM transmits intermittently because it hops
- Waiver changes compliance test to use dis-continuous transmissions – but only for MB-OFDM
- Time averaging allows MB-OFDM device to meet average power limit – even with high bursts
- Result is to limit emissions as illustrated below – but only for MB-OFDM.

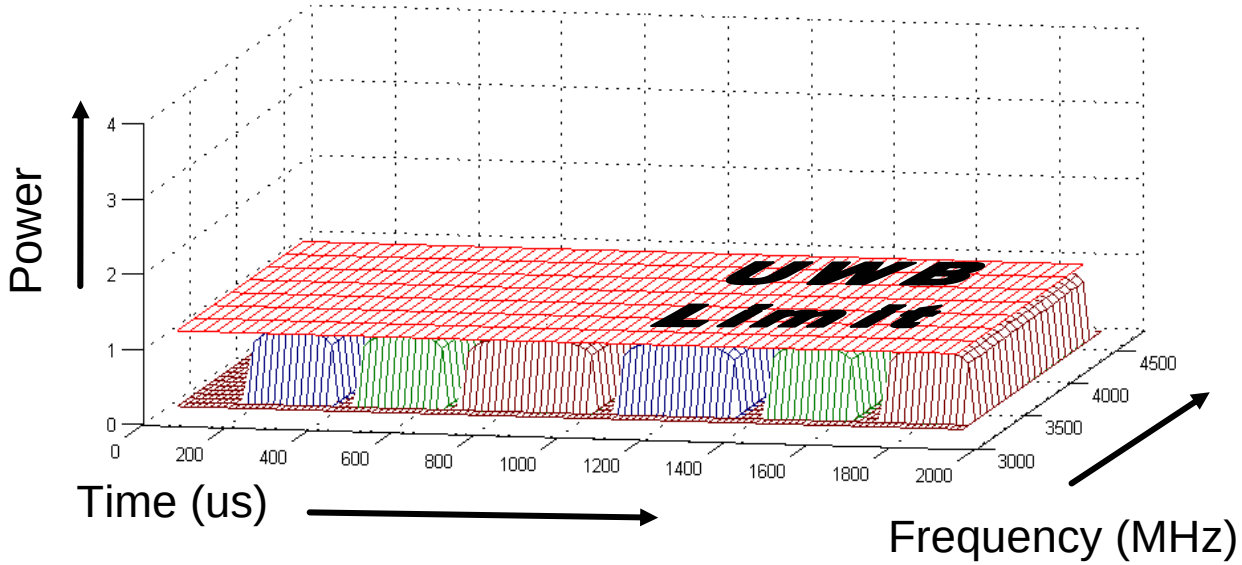


Waiver Effectively Raises UWB Limits

- Multiple units can be effectively co-located by virtue of the high isolation between frequency hops (or channels)
- Carrier sense protocols adaptively seek to maximize network throughput by sensing vacant time/frequency slots and filling them
- Result under waiver is near-continuous emissions that are well above the UWB limits
  - *even with no deliberate synchronization*
- Effect: virtually the same as raising UWB limits.
- One MB-OFDM transmitter threatens interference to licensed users – multiple units cause more

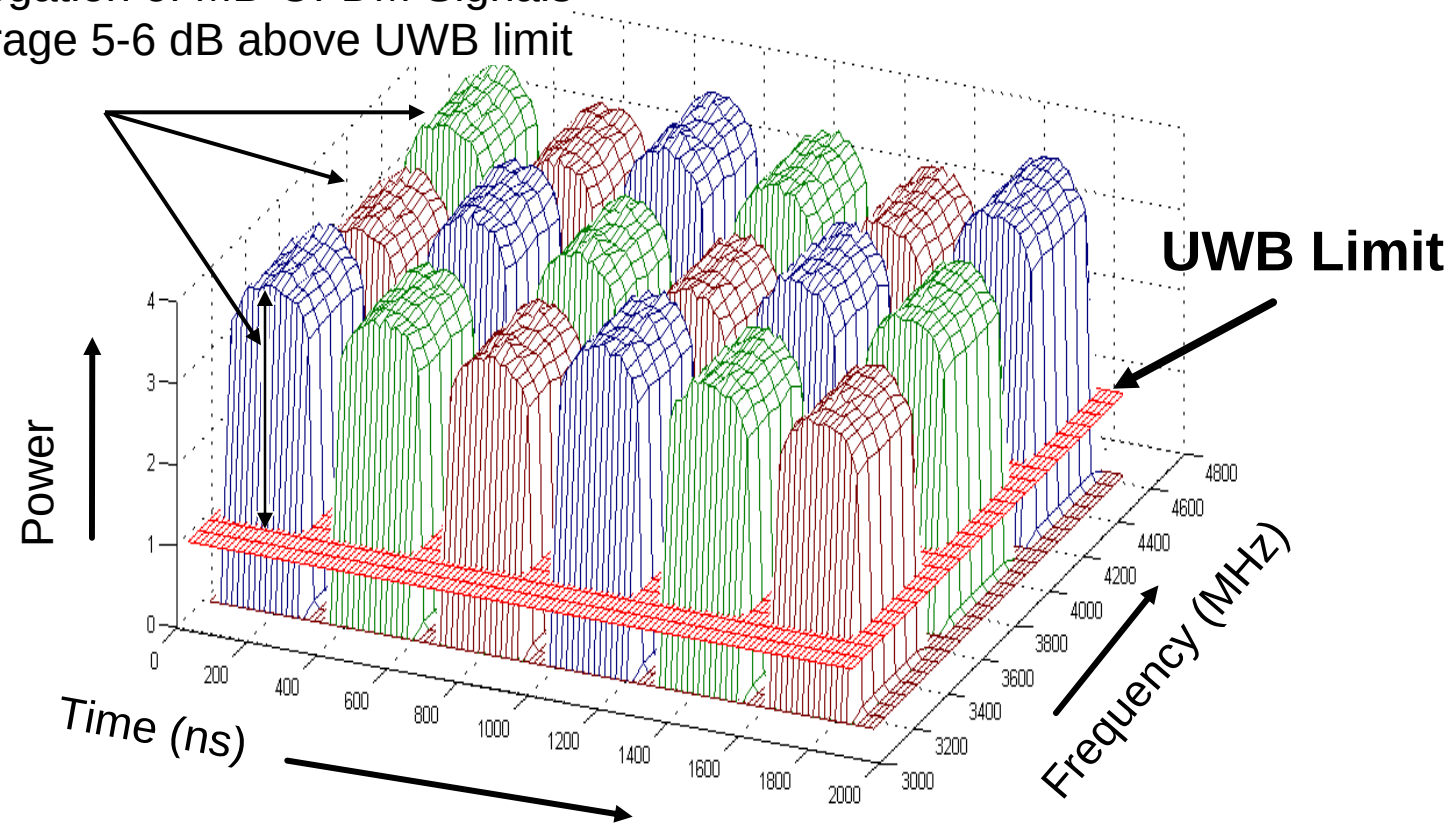
DS-UWB -- 3 Close Networks

Multiple close DS-UWB units must use
Time Multiplexing to operate effectively



MBOA Waiver -- 3 close networks

Aggregation of MB-OFDM Signals
average 5-6 dB above UWB limit



➢With multiple units, time average *exceeds* UWB limit by 5-6 dB ***continuously***

A Waiver Would Be Discriminatory

- The waiver is discriminatory:
  - **Waiver allows compliance tests to be made in normal operating mode (not continuous) but ONLY for MB-OFDM devices**
  - **Other forms of UWB could also benefit, but are prohibited by the rules**
    - **Greater range or throughput over a burst time span**
    - **Longer battery life**
      - more sleep time because data is bursted faster while the device is active.
    - **Greater aggregate throughput**
      - Each device can send more data in a shorter time slot-- when all time slots are full, more data is flowing
    - **More dense multi-piconet operation**
- A waiver would give MB-OFDM an unfair and unearned regulatory advantage at the cost of higher interference
- The waiver is ill-advised
  - **But if the FCC grants one, it must let any UWB device time-average when testing, not just MB-OFDM.**

MB-OFDM Risks Interference

- MBOA's APDs do not predict lack of interference
  - APDs are the wrong tool for the job
  - Freescale provided a counterexample: same APDs, very different interference potential
- MBOA's C-band simulations & measurements misused noise
  - MBOA injected so much noise as to put the system within 1/2 dB of failure
  - *any* interference, regardless of type, would then cause failure
  - this does *not* show MB-OFDM and DS-UWB are equally interfering
- Even without deliberate synchronization the waiver allows continuous emissions above the UWB limit.

Performance Advantages are Speculative

- MBOA alleges several “performance advantages” for MBOA
  - Most do not require frequency-hopping and do not need a waiver
    - Inherent energy capture is due to OFDM, not hopping
    - Spectral shaping is possible for all UWB
      - **Claims of MBOA simply derive from choice of using an FFT in their transmitter - Other UWB could do the same**
  - Others, such as lower complexity, are non-existent or debatable at best, and serve no public interest but only the interests of the manufacturer.
- Claimed advantages do not offset the risk of interference.

Conclusions

1. Under waiver:
   - multiple MB-OFDM units together exceed limits by 5-6 dB
   - multiple DS-UWB units together comply with limits
2. The waiver is not justified.
   - MBOA has failed to carry its burden of proof that the waiver is in the pubic interest
   - MBOA has not resolved doubts as to increased interference
     - On its face, more power means more interference
   - MBOA has not resolved doubts as to performance advantages
3. A waiver gives discriminatory preference to MB-OFDM
   - MBOA told the TAC that denial of the waiver will not disrupt their marketing plans
4. A waiver effectively raises emissions limits
   - This should be done only through a transparent rulemaking, if at all
5. Any action should await ITS test results and marketplace experience.

MBOA Waiver Request Should Be Denied

Thank you.

Michael Scullin
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Launched by Motorola
freescale semiconductor